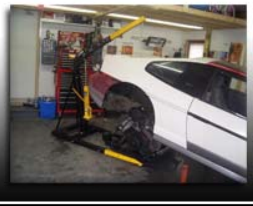

Tech Articles

Coolant Sensors/Switches...

by Elmer Schild

The Fiero has numerous sensors & switches, all designed & engineered to make your Fiero start and run smoothly. In this tech-tip we will look at the sensors & switches that are coolant related.

Coolant Temperature Sensor/Switch
The sensor that operates the temperature gauge/overheat red light is located on the top of the head, directly behind the thermostat housing on the 4 cyl., and on the 6 cyl. is located on the right rear in the block, just below the ignition coil. (note: the right side of a Fiero engine is alongside the trunk - the "front" of the engine is on the passenger side - pointing sideways to the right side of the car). One of the wires (tan) to this 2 wire sensor/switch sends a signal to the gauge based on the sender resistance due to the coolant temperature. The other wire (dk.grn.) is "switched", i.e. when the sensor reaches 257°, the switch closes and your temperature light comes on. If your temperature gauge does not work, the sending unit is probably defective; usually the dash gauge is OK. Also, the spade terminals that plug into the sender unit can corrode, come off, or break off. Its best to check that connection first! The part # for this sender for the 85-88 V6 and the 85-88 4 cyl. is #25036809 (retail $34.50) and for the 84 4 cyl. #25036628 (retail $24.77). You can check the gauge by shorting either wire at the sender to ground with the ignition on. The gauge should go to full scale, or the lamp will illuminate, respectively.

Fan Switch
When your coolant reaches 235°, this one wire sensor/switch merely closes a ground circuit, and the radiator fan engages (on a 85-87 V6, the rear cooling fan located in the right rear trunk area also comes on at the same time). When you turn on your A/C, the same function occurs, regardless of coolant temperature, the ground is completed and the fan (or fans) is engaged. On the 4 cyl. (84-86) cars w/AC, there is a 2-speed fan. You can tell if your car (84) has this 2-speed by locating a large white ceramic resistor on the fan frame rail. On the 85-86 you can tell if it is a 2-speed by checking to see if 2 wires go into the fan motor. The low speed comes on @ 221°, the high speed @ 248°. On the 4 cyl. the location of the fan switch is on the side of the head, aiming forward toward the firewall & below the temperature gauge sender and has a single wire connector (single speed) or 2 wires (2-speed fan). The 87-88 4 cyl fan is controlled by the ECM and does not have this switch. On the V-6 it is located behind the thermostat housing, vertical position, with a single dk. green/white wire connector. You can check operation 2 ways:

- Turn on the AC, the fan (or fans on the 85-87 V6) will operate.
- At the temperature switch on the engine, ground the dk. gm/white wire with the ignition on (car not running!) The fan(s) should operate. This means everything from the sensor forward is OK.

The only thing that the average owner can't check is the sensor itself. If you find your car overheating when not in motion, but cools down at speed, this switch is probably defective and should be replaced. The part # for the 4 cyl. 2-speed fan application is part #3050223 (retail $37.83). Part #3040674 (retail $14.83) is for the 1-speed 84-86 4-cyl., and for all the 85-88 V6`s.

ECM Coolant Sensor

This sensor is probably one of the most important sensors on your car. On the 4 cyl. this sensor is located on the thermostat housing, on the V6 it is located below the thermostat housing, just above the water pump, and screws into the intake manifold water jacket. This sensor sends coolant temperature data to the ECM, which uses the data to adjust fuel mixture, idle and other engine performance parameters. If defective, the engine could go into open loop, causing serious performance loss. Your car may be barely drivable at that point. You probably would get a service engine light and a code 13. Replacement ECM sensors are #10045847 (retail $3520) for the 84 4 cyl. and part #25036979 (retail $21.13) for all 85-88 engines.

In many cases the reason for a trouble code relating to this sensor is a bad ground. On the 4 cyl., the grounds are above the trannsaxle on the left side of the engine and the top left hand front of the engine above the starter solenoid.

Once you understand the operation of these sensors/switches, you will have an opportunity to check a few basic operations and possibly replace a part yourself before succumbing to a $60.00 per hour auto technician labor charge!